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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,708	04/08/2005	**Kai Schumacher**	268421US0X PCT	6886

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EXAMINER	
FRAZIER, BARBARA S	
ART UNIT	**PAPER NUMBER**
4173	

NOTIFICATION DATE	DELIVERY MODE
12/10/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/530,708	SCHUMACHER ET AL.	
	Examiner	Art Unit	
	BARBARA FRAZIER	4173	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 19* is/are pending in the application.

4a) Of the above claim(s) *9-16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,17 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/8/05,11/3/05,11/21/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I, claims 1-8, 17, and 19 in the reply filed on 11/19/07 is acknowledged. The traversal is on the ground(s) that no adequate reasons and/or examples have been provided to support a conclusion of patentable distinctiveness between the identified groups, and the a search of all of the claims would not impose a serious burden on the Office. This is not found persuasive because an example has, in fact, been provided to show that the inventions listed as Groups I-III to not relate to a single general invention concept under PCT Rule 13.1, namely, the powder mixture of zinc/titanium oxide particles is old (see paragraph 2 of Office Action dated 10/19/07). Furthermore, restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given in the previous Office action and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

(a) the inventions have acquired a separate status in the art in view of their different classification;

(b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;

(c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);

(d) the prior art applicable to one invention would not likely be applicable to another invention;

(e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

The requirement is still deemed proper and is therefore made FINAL.

1. Claims 9-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 11/19/07.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 is vague and indefinite in that there is no clear prior antecedent basis for the phrase “wherein the chloride content is less than 500 ppm”. Line 2 of claim 8 recites the presence of chloride in the composition, but claim 1, line 1 has the closed term "consisting of". It is not clear if the “chloride content” is a contaminant of the composition, or an additional component of the composition.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyatuka, U.S. Patent 3,794,717.

The claimed invention is drawn to a powder mixture according to claim 1:

> Claim 1 (Currently Amended): A powder mixture consisting of:
>
> zinc/titanium mixed oxide particles, titanium dioxide particles and zinc oxide particles,
>
> wherein the zinc/titanium mixed oxide particles have a composition according to the formula $(ZnO)_{1-x}(TiO_2)_x$, ~~where~~ wherein $0.01 < x < 0.99$[[,]];
>
> and are obtained from a thermal process, and
>
> wherein the powder mixture exhibits remission which, in the UV range from 320 to 400 nm, is lower than that of titanium dioxide and, in the UV range below 320 nm, is lower than that of zinc oxide.

Miyatuka discloses compositions consisting of titanium dioxide, zinc oxide, and zinc/titanium mixed oxide particles (for example, see Example 2, table at column 6). The mixed fine powder is obtained from heat treatment at temperatures not lower than 600C (abstract and Example 2). The molar ratio of zinc oxide to titanium oxide in the mixed powder is 1:1 (col. 6,

lines 20-21), thus making the value of x (in the formula of claim 1) equal to 0.5. Therefore, the composition of Miyatuka anticipates the composition of the claimed invention.

With respect to the remission exhibited (lines 7-9 of claim 1), it is noted that the remission would be an inherent property of the composition formed, such that a composition having the same components as that of the claimed invention would necessarily have the same remission values.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyatuka, US Patent 3,794,717.

The claimed invention and the invention of Miyatuka are recited above (see paragraph 6). Miyatuka differs from the claimed invention because it does not specifically state if the mixed oxide is crystalline (claim 4), the isoelectric point of the mixed oxide (claim 5) or the proportion of rutile titanium dioxide (claim 6). However, since defined reflections are observable in an X-ray diffractogram (see table at column 6 and Applicant's definition of "crystalline" at page 4, lines 24-26 of the specification), one skilled in the art would recognize that the mixed oxide particles would be crystalline. Also, one skilled in the art would expect the isoelectric point to be between that of zinc oxide and that of titanium dioxide, since a mixture of two components would be expected to have an isoelectric point that falls somewhere between the isoelectric points of the two components, and there is no evidence to the contrary in Miyatuka. Finally, since rutile is the most common polymorph of titanium dioxide found in nature, and absent evidence to the contrary, one skilled in the art would expect the titanium dioxide particles to amount to at least 1%, relative to the sum of rutile, anatase and brookite modifications.

11. Claims 1-8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hemme et al., US Patent 6,627,173.

The claimed invention is recited above (see paragraph 6). Hemme et al. disclose a doped titanium dioxide doped with zinc oxide (see abstract and Examples 4 and 5), obtained by a thermal process (Example 4, col. 6, lines 11 and 27, and Example 5, col. 6, lines 48 and 65). The product obtained is a "finely divided white powder" (col. 6, lines 35-37). Hemme et al. differ from the claimed invention because it doesn't specifically state the ratio of zinc/titanium mixed oxide particles in the product, or the presence of titanium dioxide particles and zinc oxide particles. However, based on the amount of influx of starting materials in Examples 4 and 5 (0.65 kg/h of TiCl4 and 31.7 g/h of ZnCl2 in Example 4, and 1.32 kg/h of TiCl4 and 112.6 g/h of ZnCl2 in Example 5), it appears that the resultant ratios of titanium dioxide/zinc oxide would be 20.5 and 11.72, respectively; at such ratios, the resulting values for x would fall within the range specified in claims 1 and 3 of the claimed invention. Furthermore, the presence of zinc oxide and titanium dioxide mixed powder in the final product would inherently mean that zinc oxide particles and titanium dioxide particles are also present in the product.

With respect to the amount of zinc/titanium mixed oxide particles (claim 2), it is noted that, based on the data provided in Table 2, column 11, regarding the amount of contaminants present, and absent any evidence to the contrary, it would necessarily follow that the amount of zinc/titanium mixed oxide particles obtained as the product would be greater than 50 wt.% or 80 wt.%.

With respect to the shape of the particles being crystalline (claim 4), it is noted that the zinc salt aerosol changes into a gas and a salt crystal aerosol (col. 6, lines 25-29). Based on this information and absent any evidence to the contrary, it appears that the resultant mixed oxide particles would also be crystalline.

With respect to the isoelectric point of the mixed oxide (claim 5) or the proportion of rutile titanium dioxide (claim 6), it is noted that one skilled in the art would expect the isoelectric point to be between that of zinc oxide and that of titanium dioxide, since a mixture of two components would be expected to have an isoelectric point that falls somewhere between the isoelectric points of the two components, and there is no evidence to the contrary in Hemme et al. Finally, since rutile is the most common polymorph of titanium dioxide found in nature, and absent evidence to the contrary, one skilled in the art would expect the titanium dioxide particles of Hemme et al. to amount to at least 1% of the rutile modification, relative to the sum of rutile, anatase and brookite modifications.

With respect to the BET surface area of the powder mixture (claim 7), it is noted that the BET surface areas of Examples 4 and 5 of Hemme et al. are 78 and 56, respectively (see Table 2 at column 11).

With respect to the chloride content (claim 8), it is noted that the chloride content of Example 4 is 44 ppm (see Table 2 at column 11).

With respect to the powder mixture being an adsorbent for UV radiation (claim 19), it is noted that powder mixture of Hemme et al. may be used as an adsorbent for UV radiation (col. 2, lines 25-27).

12. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hemme et al., US Patent 6,627,173 as applied to claims 1-8 and 19 above, and further in view of Iwaya et al., US Patent 5,032,390.

The claimed invention is drawn to a sunscreen preparation comprising the powder mixture as described in claim 1. The invention of Hemme et al. is recited above (see paragraph 11). Hemme et al. differs from claim 17 of the claimed invention because it does not specifically state that the powder mixture is used as a sunscreen preparation. However, it is generally well known in the art of sunscreen preparations to use mixtures of titanium and zinc oxide particles. As evidence, Iwaya et al. disclose anti-suntan (i.e., sunscreen) compositions comprising fine particulate zinc oxide and further containing titanium oxide (col. 2, lines 9-14 and claim 2). Since the composition of Hemme et al. is already disclosed to be an adsorbent for UV radiation, and since zinc and titanium oxide particles are already known to be useful in sunscreen compositions, one skilled in the art would readily recognize that the composition of Hemme et al. would also be useful in sunscreen compositions. Furthermore, the amounts of zinc oxide and titanium oxide used in Iwaya et al. are 1-25% by weight. This appears to be comparable to the amounts claimed by Applicants, and in any case, it would have been obvious to determine workable and/or optimal amounts of the powder mixture per the reasoning of well-established precedent, such as In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). (Holding that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.")

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use the powder mixture of Hemme et al. in a sunscreen preparation according to the amounts specified in claim 17 of the claimed invention, with a reasonable expectation of success.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Frazier whose telephone number is (571)270-3496. The examiner can normally be reached on Monday-Thursday 8am-4pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ardin Marschel can be reached on (571)272-0718, or Cecilia Tsang can be reached on (571)272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BSF

/Ardin Marschel/
Supervisory Patent Examiner, Art Unit 1614